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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/523,829  
Filing Date: February 08, 2005  
Appellant(s): ASHIDA ET AL.

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David P. Emery  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed June 19<sup>th</sup> 2007 appealing from the Office action mailed March 29<sup>th</sup> 2006.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,064,003	MOORE et al.	05-2000
4,521,064	KNAPP et al.	06-1985
4,070,084	HUTCHISON	01-1978
5,057,650	URUSHIBATA et al.	10-1991
4,864,081	BATES	09-1989
4,834,674	BEAMENDERFER et al.	05-1989
5,780,774	ICHIKAWA et al.	07-1998

## **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-4, 6-10 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moore et al. (6,064,003) in view of Knapp et al. (4,521,064).

Moore et al. discloses an electrical connector (Figures 6-8) comprising a terminal (71) fixed to connector housing, a conductor exposed from a covering and having a connection portion connected to a connection portion of the terminal, a foam element (72) at a predetermined foam ratio located around respective connection portions of the conductor and the terminal (re claims 1, 14 and 15). Moore et al. also discloses the foam element including a foam resin (re claim 3), the foam element having strength to maintain a structure thereof (re claim 7), the foam element being molded to cover respective connection portions (re claim 10), and the conductor and the terminal being connected by welding (col. 3, lines 45-48). Claim 8 is a method counterpart of claim 1. Re claim 4, the foam element can function as a capacitive capacitor since it comprises structure and material as claimed. Re claim 16, since the conductor and the terminal being connected together by welding, there would be a molten alloy layer at the connection portion.

Moore et al. does not disclose the foam element having a foam ratio selected to substantially match the impedance of the covering of the conductor (the foam ratio of the foam element is 20% or more, see specification page 12, lines 5-7) nor

the foam ratio of the foam element being greater than 0% and 80% or less (re claim 6).

Knapp et al. discloses an electrical connector comprising a foam element (50) which has a foam ratio of 35%-55%. It would have been obvious to one skilled in the art to provide the foam element of Moore et al. to have an impedance being closer to impedance of the covering of the conductor, in other words to provide the foam element of Moore et al. with a foam ratio of 35%-55% as taught by Knapp et al. to meet the specific use of the resulting device since lower ratio would reduce the moisture-proof qualities and higher ratio would reduce the compressibility of the material.

The modified assembly of Moore et al. also discloses the foam element including a resin, wherein impedance of the foam element being closer to impedance of the covering (re claims 2 and 9).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moore et al. in view of Knapp et al. as applied to claim 1 above, and further in view of Hutchison (4,070,084).

Moore et al. discloses the invention substantially as claimed including the connection portions being located in the cavity of the connector housing. Moore et

al. does not disclose the connector housing being made of a foamed resin.

Hutchison discloses an electrical connector comprising a connector housing (15).

Hutchison discloses that using foamed material for the connector housing would lower the dielectric constant. It would have been obvious to one skilled in the art to use foamed resin for the connector housing of Moore et al. to lower the dielectric constant around the connection portions as taught by Hutchison.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moore et al. in view of Knapp et al. as applied to claim 8 above, and further in view of Urushibata et al. (5,057,650).

Moore et al. discloses the invention substantially as claimed except for the foam element being formed into a predetermined shape to be fitted to respective connection portions. Urushibata et al. discloses an electrical connector comprising a predetermined shape (20) which is formed to be fitted to respective connection portions. It would have been obvious that instead of molding the foam element of Moore et al. to cover respective connection portions, one skilled in the art would form the foam element into a predetermined shape to be fitted to respective connection portions as taught by Urushibata et al. to eliminate the molding step at the connection time.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moore et al. in view of Knapp et al. as applied to claim 8 above, and further in view of Bates (4,864,081).

Moore et al. discloses the invention substantially as claimed except for the foam element being formed as a tape to be wound around the connection portions. Bates discloses an electrical connection comprising a foam tape (50) covering the connection portions. It would have been obvious that instead of molding to form the foam element to cover the connection portions of Moore et al., one skilled in the art would use the foam tape as taught by Bates to wind around the connection portions since a preformed tape is much easier to apply at the connection time as taught by Bates and since winding a tape around an electrical connection is well-known in the art.

7. Claims 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beamenderfer et al. (4,834,674) in view of Knapp et al.

Beamenderfer et al. discloses an electrical connector (Figure 6) comprising a cable which is comprised of an electrical wire including a conductor exposed from a first covering, a drain wire (5) arrayed parallel to the electric wire, and a jacket

holding the electric wire and the drain wire, a connection terminal having a connection portion connected to an end of the conductor, an earth terminal having a connection portion connected to an end of the drain wire, a connector housing receiving the connection terminal and the earth terminal, a resin (18) located around the end of the conductor, the connection portion of the connection terminal, the end of the drain wire and the connection portion of the earth terminal, and a second covering (19) located around the resin (18). Beamenderfer et al. also discloses the conductor and the terminal being welded together.

Although it may be shown in Figure 6, Beamenderfer et al. does not specifically disclose the resin (18) being a foam resin having a foam ratio selected to substantially match the impedance of the covering of the conductor (the foam ratio of the foam element is 20% or more, see specification page 12, lines 5-7), the foam resin being extruded to cover the connection, nor the second covering being molded.

Knapp et al. discloses an electrical connector comprising a foam resin (50) located around connection portions, wherein the foam resin has a foam ratio of 20% or more. It would have been obvious to one skilled in the art to use foam resin having a foam ratio of 20% or more for the resin (18) of Beamenderfer et al. (impedance of the foam element is closer to impedance of the covering of the

conductor), as taught by Knapp et al. to meet the specific use of the resulting device since it is taught by Knapp et al. that lower ratio would reduce the moisture-proof qualities and higher ratio would reduce the compressibility of the material.

It would have been obvious to one skilled in the art to provide the foam resin (18) and the second covering (19) of Beamenderfer et al. by extrusion and by molding respectively since these are well-known methods in the art for being used to form coverings or housings.

8. Claims 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al. (5,780,774) in view of Moore et al. and Knapp et al.

Ichikawa et al. discloses a method of fabricating a connector (Figure 3), comprising welding a terminal and a conductor to each other for connection, forming a pair of resin members preliminarily formed into shapes which conform to an upper half and a lower half shape of connection portions, and fitting said pair of resin members around the connection portions.

Ichikawa et al. does not disclose the pair of resin members being made of foam resin nor molding a resin around the foam resin members. Moore et al. discloses an electrical connector comprising foam resin member (72) covering the connection portions of terminal and conductor and a resin (74) around the foam

member (72). It would have been obvious to one skilled in the art to use foam resin as taught by Moore et al. for the resin members of Ichikawa et al. to provide a water-tight seal over the connection portions. It would also have been obvious to one skilled in the art to mold a resin (74) as taught by Moore et al. around the pair of foam resin members of Ichikawa et al. to provide a positive seal and since molding is a well-known method for being used to form a resin cover around another member.

Re claim 20, the modified connector of Ichikawa et al. discloses the invention substantially as claimed except for the foam element having a predetermined foam ratio selected to substantially match the impedance of the covering of the conductor (the foam ratio of the foam element is 20% or more, see specification page 12, lines 5-7). Knapp et al. discloses an electrical connector comprising a foam element (50) which has a foam ratio of greater than 20%. It would have been obvious to one skilled in the art to use foam resin having a foam ratio of 20% or more for the covering members of Ichikawa et al. (impedance of the foam element substantially matches to impedance of the covering of the conductor), as taught by Knapp et al. to meet the specific use of the resulting device since it is taught by Knapp et al. that lower ratio would reduce the moisture-proof qualities and higher ratio would reduce the compressibility of the material.

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al. in view of Bates and Knapp et al.

Ichikawa et al. discloses an electrical connector, comprising welding a terminal to a conductor and molding a resin (Figures 3-4) for a connector housing around the terminal and the conductor exposed from a covering. Ichikawa et al. does not disclose preparing a foam resin tape to be wound around the connection portions before molding the resin, wherein the foam resin tape has a predetermined foam ratio selected to substantially match the impedance of the covering of the conductor (the foam ratio of the foam element is 20% or more, see specification page 12, lines 5-7). Bates discloses an electrical connector comprising a foam resin tape covering a connection portion between a terminal and a conductor. It would have been obvious to one skilled in the art to use the foam resin tape as taught by Bates to wind around the connection portion of Ichikawa et al. to further protect the connection portion and since winding a tape around an electrical connection is well-known in the art. Knapp et al. discloses an electrical connector comprising a foam element (50) which has a foam ratio of greater than 20%. It would have been obvious to one skilled in the art to use foam resin having a foam ratio of 20% or more for the modified resin tape of Ichikawa et al. (impedance of

the foam element substantially matches to impedance of the covering of the conductor), as taught by Knapp et al. to meet the specific use of the resulting device since it is taught by Knapp et al. that lower ratio would reduce the moisture-proof qualities and higher ratio would reduce the compressibility of the material.

#### **(10) Response to Argument**

Regarding the 35 U.S.C. § 112, Second Paragraph rejection, as stated in the Advisory Action mailed on July 20<sup>th</sup> 2006, such rejection has been withdrawn.

Appellant alleges that the examiner has failed to establish proper *prima facie* obviousness, and even if combined as the examiner has attempted, neither Moore nor Knapp, alone or in combination teach or suggest, "a foam ratio selected to substantially match the impedance of the connection portion with the covering of the conductor".

Examiner disagrees. In response to applicant's argument that the examiner has failed to show *prima facie* obviousness, it has been held that the examiner's burden of establishing *prima facie* obviousness is satisfied by a showing of structural similarity between the claims and prior art; it does not require a showing of some suggestion of expectation in the prior art that the structurally similar subject matter will have the same or a similar utility as that discovered by the

applicant. *In re Dillon*, 16 USPQ 2d 1897. Although Moore et al. and Knapp et al. do not exactly word-to-word discloses "a foam element at a foam ratio selected to substantially match the impedance of the connection portion with the covering of the conductor", the modified connector assembly of Moore et al. comprises structure and material as claimed. Specifically, the modified connector assembly of Moore et al. comprises, along with other features, a foam element including a foam resin and having a foam ratio greater than 0% and 80% or less. Accordingly, the modified connector of Moore et al. would include the physical properties as claimed.

Appellant then argues that the examiner is guilty of classic hindsight reconstruction because the proposed motivating factor- "to have an impedance being closer to the impedance of the covering of the conductor"- is found nowhere in any of the prior art references cited by the examiner. Examiner disagrees. Examiner does NOT rely on the appellant's own disclosure to provide a reasoning for combining the references.

Claim 1 of the present invention broadly recites a foam element at "a foam ratio selected to substantially match the impedance of the connection with the covering of the conductor". To understand such claimed terminology and to understand what ratio of the foam element required to perform the claimed

function, examiner turns to the appellant's disclosure to find support for the claimed terminology. As supported by the appellant's specification, in order for the impedance of the connection portion matching with the covering of the conductor, the foam element should has a foam ratio of at least 20%, page 12, lines 5-11. Moore et al. discloses the foam element 72 but lacks the foam ratio. Knapp et al. teaches a connector assembly comprising a foam element. Knapp et al. also teaches that the foam element should have a foam ratio of 20% or more to provide a balance between moisture-proof qualities and the compressibility of the material. In the rejection, examiner then states that it would have been obvious to one skilled in the art to provide the foam element of Moore et al. to have a foam ratio greater than 20% as taught by Knapp et al. to meet the specific use of the resulting device since lower ratio would reduce the moisture-proof qualities and higher ratio would reduce the compressibility of the material.

In conclusion, the examiner's reasoning to combine the references does NOT come from appellant's own disclosure.

Appellant then argues that neither Moore nor Knapp, alone or in combination, teach or suggest, "a foam ratio selected to substantially match the impedance of the connection portion with the covering of the conductor," as recited in claims 1, 8, 14 and 15. First, Moore, as conceded by the Examiner, fails to teach

or suggest any foam element. Secondly, Knapp, while disclosing a foam material, only teaches or suggests the use of the foam material as a seal against water penetration and ice formation. (col. 3, lines 32-38).

This is not true. Moore does teach a foam element (72), and the foam element of Moore covers the connection between terminal and conductor. Accordingly, the foam element of Moore is also used as a seal. The fact that Knapp teaches a foam element, in a connector assembly, having a foam ratio greater than 20%, specifically 35%-55%, to provide a balance between moisture-proof qualities and the compressibility of the material, one skilled in the art would have desired to provide the foam element (72) of Moore to have such foam ratio so that the moisture-proof qualities of the foam element will not be reduced or eliminated (see Knapp, col. 4, lines 28-36).

Appellant alleges that the examiner analogizes that because Knapp teaches that the foam element should have a foam ratio of 20% or more, Knapp somehow discloses the selecting a foam element at a foam ratio to substantially match the impedance of the covering of the conductor. Again, examiner does NOT state that because Knapp teaches that the foam element should have a foam ratio of 20% or more, Knapp teaches the foam ratio being selected to substantially match the impedance of the covering of the conductor. Instead, it was stated in the Office

Action that because Knapp teaches a foam element, in a connector assembly, having a foam ratio greater than 20%, specifically 35%-55%, to provide a balance between moisture-proof qualities and the compressibility of the material, one skilled in the art would have desired to provide the foam element (72) of Moore to have such foam ratio so that the moisture-proof qualities of the foam element will not be reduced or eliminated. The fact that the modified connector assembly of Moore comprises, along with other features, a foam element including a foam resin and having a foam ratio greater than 20% (taught by Knapp), without evidence to the contrary, the same material, with the same foam ratio will result in the same physical properties as claimed are disclosed in the modified connector assembly of Moore.

In response to appellant's argument that just like Moore and Knapp, Hutchison does not teach or suggest "a foam ratio selected to substantially match the impedance of the connection portion with the covering of the conductor", the Hutchison reference is relied upon only to support the position of using foam resin for the connector housing to lower the dielectric constant around the connection portion. Therefore, Hutchison doesn't have to disclose a foam ratio selected to substantially match the impedance of the connection portion with the covering of the conductor.

In response to appellant's argument that Urushibata fails to contemplate any impedance values, the Urushibata reference is relied upon to support the position of forming a connection covering into a predetermined shape before the connection takes place. Therefore, Urushibata does not have to disclose a foam ratio selected to substantially match the impedance of the connection portion with the covering of the conductor.

In response to appellant's argument that Bates fails to contemplate any impedance values, the Bates reference is relied upon only to support the position of forming a foam element into a tape which is wound around the connection portion. Accordingly, Bates does not have to disclose a foam ratio selected to substantially match the impedance of the connection portion with the covering of the conductor.

In response to appellant's argument that the combination of Beamenderfer and Knapp fails to teach "a foam ratio selected to substantially match the impedance of the connection portion with the covering of the conductor", the fact that the modified connector assembly of Beamenderfer comprises, along with other features, a foam element including a foam resin and having a foam ratio greater than 20% (taught by Knapp), the physical properties as claimed are disclosed in the modified connector assembly of Beamenderfer.

Regarding the rejection of claims 18 and 20, appellant alleges that one of ordinary skill in the art would not be motivated to replace the resin members of Ichikawa with the foam members of Moore to provide a water-tight seal over the connection portion as proposed by examiner. No portion of Ichikawa implies that a water-tight seal is even desired. Replacing the resin with foam would destroy the high strength between the connection portions and the conductors as taught by Ichikawa.

Examiner disagrees. First, examiner does not propose to replace the resin members of Ichikawa with the foam members of Moore. Instead, the resin members of Ichikawa were modified to be foamed resin as taught by Moore to provide a water-tight seal. It has been held that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

In addition, modifying the resin members of Ichikawa to be foamed resin members would not destroy the high strength between the connection portion and

the conductors because the modified foamed resin members of Ichikawa are further covered by a connector housing.

Appellant then argues that even if combined as alleged, the cited combination fails to teach or suggest "forming a pair of foam resin covering members preliminarily formed into shapes", "fitting said pair of covering members around the connection portions" and "molding a resin for a connector housing around the terminal, the covering members and the conductors". The resin material 9 of Ichikawa is not preliminarily formed and then fitted around the connection portions. Examiner disagrees because the combination of Ichikawa and Moore teaches a pair of foam resin covering members (4, 9) which are fitted around the connection portions, and a resin connector housing (74, see Moore) is fitted around the terminal, the covering members and the conductors. Claim 18 recites welding a terminal and a cable conductor to each other for connection, and forming a pair of foam resin covering members preliminarily formed into shapes. In other words, the welding is formed before the forming of the upper half. Ichikawa et al. discloses welding the lead wire 1 (a terminal) and the flat cable 2 (a cable conductor) to each other for connection and forming the resin material 9 preliminarily formed into shape which conforms to an upper half shape.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



Chau N. Nguyen

Primary Examiner

Conferees:

Chau N. Nguyen 

Dean Reichard 

David Blum 